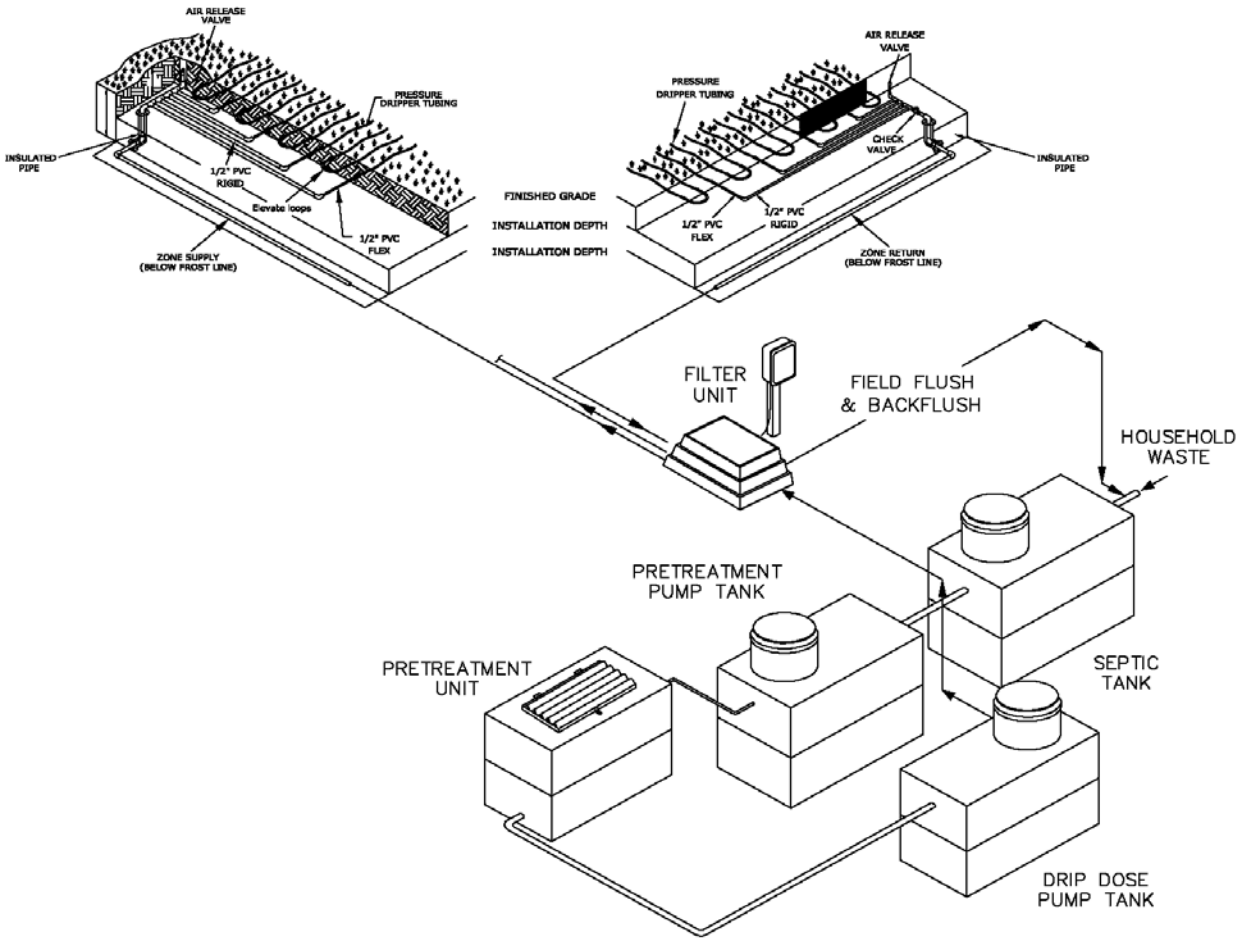
PERC-RITE® SERVICE MANUAL

AMERICAN TWO TANK DRIP SYSTEM

4 ZONE COMBINATION DOUBLE SIMPLEX

PATENT NO. 5,200,065

PATENT NO. 5,984,574B



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Dealer

MANUFACTURED BY:
AMERICAN MANUFACTURING COMPANY, INC.
22011 GREENHOUSE ROAD, ELKWOOD, VA. 22718
1-800-345-3132

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IMPORTANT NOTICE

This Dealer Manual is intended to give general information and guidance to authorized dealers and other qualified installers. The installer must determine the suitability of an American Manufacturing Company Septic Drip Disposal System for sewage disposal regarding basic design and layout and how the system functions in a specific site. The final decision as to the suitability of a system must be made by the designer. Suitability should be based on consideration of the general standards and information contained herein as well as other applicable waste disposal reference materials, specific topography, soil characteristics, space limitations, and other factors associated with a particular project. Consequently, American Manufacturing Company, Inc., a Virginia corporation, shall not be held liable in any manner to design engineers and other designers or installers of sewage disposal systems for claims arising from the use of the information contained herein nor actions arising from the reliance upon the accuracy of such information.

Additionally, unless American Manufacturing Company, Inc. or its employees are primarily responsible for a particular project, American Manufacturing Company, Inc. assumes no responsibility regarding, and shall not be liable to, any purchaser of a System in any manner for any of the following:

a. any decision regarding the suitability of a Drip Disposal System
b. the design and/or installation of a Drip Disposal System for any particular project, nor
c. the utility or functioning of a Drip Disposal System for the project.

Purchaser's rights are set forth in the limited warranty and the Equipment Purchase Contract (invoice) in the event that the equipment itself is defective.

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DEALER RESPONSIBILITY

PURPOSE

The purpose of this section is to outline the responsibilities of the Dealer regarding the installation, monitoring, maintenance and warranty of the drip dispersal system as part of an on-site sewage treatment system.

INSTALLERS SCHEDULE OF DUTIES

1. The Dealer shall be responsible for the entire installation and shall only sell and install systems according to approved plans and permits.
2. The Dealer shall be responsible for insuring proper electrical installation and startup including recording startup date and initial meter readings.
3. The Dealer will meet standards for operation and maintenance per the jurisdictional health department.
4. The Dealer shall assure that all employees who work on the American Drip System are trained, understand and can perform operation and maintenance per the Drip System manufacturer manuals.
5. The Dealer is responsible for informing the owner within the first month of operation of the type of system installed and the owners responsibilities.
6. The Dealer is responsible for the first annual inspection after the 3rd month of operation.
7. The Dealer is responsible for one visit after first year of operation. The visit to include the following;
    - Sludge Judge the septic tank blanket
    - Inspect the drip system hardware for operation
    - Inspect system with operational checklist
    - Check landscaping for interference with system
    - Check water usage and evaluate usage compared to design

The inspection frequency should be set based on the first year's evaluation. Future inspections should be at a minimum once per year. If high strength waste is suspect, take sample for BOD,SS, and FOG.

8. Removal, replacement or alteration to this system must be in compliance with all applicable current county health department requirements, governing sewage treatment regulations and the manufacturer.

OWNER'S RESPONSIBILITIES

1. Acknowledge receipt and comply with instructions of the owner's manual provided. Reference owner's responsibilities in manual.
2. Notifying the Dealer or the designated agent immediately of any problems with the sewage treatment system.
3. Keeping the monitoring / access covers free of obstructions at all times.
4. Granting Installer / Operator and health department personnel access to the owner's property to service or inspect the sewage treatment system at any time during warranty period.
5. If system fails, owner will notify operator, manufacturer, and local health department.
6. Pumping the septic tank or other costs associated with the treatment system is not covered under any warranty. Pumping is required from time to time (frequency) varies by jurisdiction just like in conventional systems due to the production of solids during the treatment process.
7. Failure to make any payments when due shall be considered a breach of warranty and the operator may terminate warranty work without notice.

When and How to use manual

This owner's manual should be read cover to cover initially, and then as needed to answer any questions or assist the owner in fulfilling their maintenance and inspection responsibilities.

When and Where to call for assistance or get additional information

If at any time you have a question about the ***AMERICAN PERC-RITE® DRIP SYSTEM*** or observe any alarm or unusual condition, you should call your qualified service representative or installing contractor as soon as possible. The owner should record in the back of this manual, the contact name and telephone number of the qualified service representative and installing contractor. If further assistance is needed, call American Manufacturing Company, Inc. at 800-345-3132, or visit us at www. americanonsite.com.

Overview of Manual

The manual is organized to cover safety precautions and warnings, an overview of the ***AMERICAN PERC-RITE® SYSTEM*** components, and the owner's responsibility. A startup log and limited warranty are in the back of this manual.

Safety Precautions and Warnings

The owner or operator of the ***AMERICAN PERC-RITE® SYSTEM*** should take precautions consistent with operators working with sewage and electricity when working with, or around any of the system components.

Electrical Hazards

The ***AMERICAN PERC-RITE® DRIP SYSTEM*** incorporates pump(s), float switches, relays and many electrical components that use 230 volts, 120 volts or 24 volts AC. Improper use of equipment can cause an electrical shock and may lead to serious injury or death.

Sewage Hazards

Proper attention should be given to cleanup when working in and around the septic and pump tanks and wastewater handling equipment to insure that disease causing bacteria are not transmitted to persons or contact surfaces. The septic and pump tanks can allow for a toxic buildup of poisonous gasses that can lead to serious injury or death if inhaled.

Heavy Lifting Hazards

The owner and/or operator should exercise proper caution when lifting heavy system components, such as pump tank lids. Improper lifting of heavy components can lead to loss of limb and/or mobility**.**

Overview of the AMERICAN PERC-RITE® TWO TANK PRETREATMENT TO DRIP

The system is a pretreatment and fluid dispersal system providing a combined two tank control for pretreatment and drip dispersal in one panel box. The pretreatment is followed by slow rate, equal distribution over an absorption area by way of subsurface drip irrigation tubing. Disc filtration is utilized during the final disposal process, filtering the fluid from the pretreat before final dispersal. The system incorporates two pumps to manage the system. The first pump, located in the pretreat feed tank, is for time dosing the pretreatment unit. The second pump, located in the final pump tank, provides the higher head required for the drip system's disc filter backflush and final disposal.

The pretreat pump for pretreatment, the drip pump, the disc filtration, and distribution systems are all managed by a single controller. The control allows reprogramming of the time and volume of dose to different individual zones (absorption areas) and/or pretreatment unit(s). In addition, the system water meter allows for the retrieval of water use information. The system provides for treatment and disposal on a time dose basis as opposed to typical conventional demand dosing. The dosing tank volume provides equalization for the accommodation of peak flows. The control unit insures time interval dosing of the treatment and absorption areas at the design loading.

If the design flow is exceeded for any extended period a high water alarm will sound. If the high water alarm in the final pump tank is activated, the pretreat feed pump will become disabled (optional). This is to prevent the liquid level in the final pump tank from rising due to accumulation of pretreat effluent. If flows are less than designed, the control will halt the pretreatment and drip dosing cycles until enough effluent has accumulated for a pretreat and/or final disposal dose. This provides resting for both the absorption area and pretreat. The dosing time may be altered to accommodate observed variance of historic water use as obtained from the flow meter. The system can be "tuned" for sewage flows at the site to insure that the absorption area is dosed at the proper interval. If use is considerably less than as designed, one zone maybe removed from service to rest the unused area.

Specifications

DISC FILTERS - Disc Filters shall be an oblique filter, entirely of plastic, with two 3/4" male end connections to NPT schedule 40 pressure PVC. The filter elements shall consist of grooved rings, mounted on a spine, forming a cylindrical filter body. The rings are to be kept together by a spring seated at the bottom of the filter cover. The out-in filter shall be of the screw in type with nitrilic rubber o-ring seal. The body materials shall be polyester, the spine and rings shall be polypropylene, and the spring shall be stainless steel. The nominal filtration capacity of the filter shall be 115 microns.

DRIPPER TUBING - The dripper tubing shall be Netafim Bioline pressure compensating dripperline for wastewater. The tubing shall be nominal 0.61 gallons per hour (+/- 5% flow rate from 7 to 60 psi). The tubing shall function as a turbulent flow emitter between 0 and 7 psi, ensuring that the nominal design flow is not exceeded at system start-up. The tubing shall be polyethylene 120 psi rating. Tubing end connections and splice connections shall be manufactured specifically for the tubing and for connection to standard schedule 40 NPT adapters.

AUTOMATIC CONTROL VALVES - The automatic control valves shall be solenoid activated diaphragm valves by Bermad. The body and cover shall be reinforced nylon. The metal parts shall be stainless steel, the diaphragm shall be nylon-fabric reinforced poly isoprene. The seals shall be Buna-N. These valves shall operate electrically using hydraulic pressure to open and to close.

RETURN PRESSURE ASSEMBLY FOR ZONE RETURN CONTROL VALVE - The automatic zone return valve shall, in the event the drip zones are over 8 feet in vertical elevation above the hydraulic unit, have installed a "return pressure assembly". The assembly is to be used to prevent the line from draining after or during each dose. See standard detail.

GRAVITY PIPING - All gravity piping shall be schedule 40 PVC DWV as a minimum. Fittings shall be Schedule 40 PVC suitable for underground installation. All joints shall be solvent welded with the use of primer and PVC Glue.

NON-DRIPPER LINE PRESSURE PIPING - All non-dripper line pressure piping shall be PVC schedule 40 pressure rated. Rigid piping shall be standard ASTM 1120 for use with solvent welded Schedule 40 fittings. Flex piping shall be schedule 40 PVC flex pipe for use with pressure fittings.

FLOAT SWITCHES - Float switches for level indication and control shall be encapsulated mercury or mechanical differential switches. The switches shall be provided by American Manufacturing, or equal.

GENERAL VALVES - All gate, ball, globe and check valves shall be Schedule 40. Check valves shall be of the swing check design of metallic bronze with corrosion resistant metal hinge pin for use in wastewater.

PIPING DISCONNECTS - Piping disconnects shall be PVC schedule 80 unions.

AIR RELEASE VALVES - Air release valves shall be resilient seat "pop-up" type air release valves for use with filtered effluent (nominal filtration size of 115 microns.)

WIRE SPLICES - Field wire splices shall be installed in suitable wire splice pull boxes with waterproof connections for access to splice connections. The boxes shall have structural capacity for in ground installation and light vehicle yard care traffic.

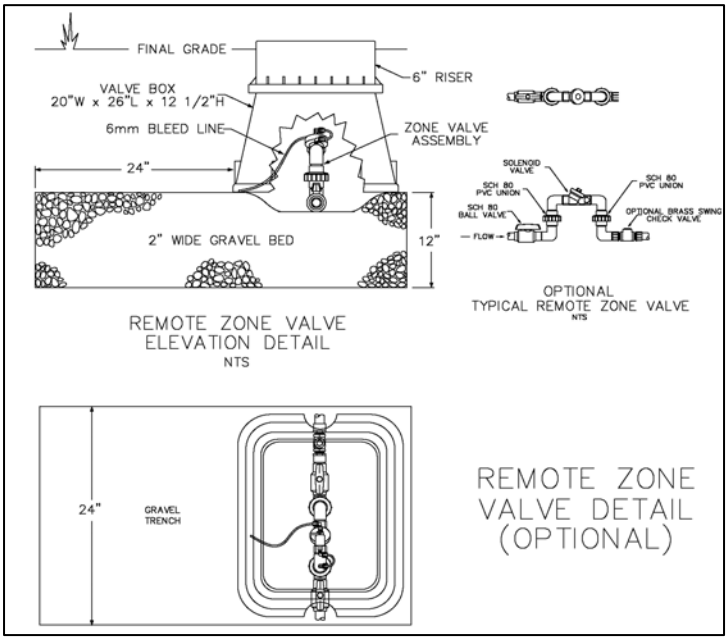
SPECIAL DRIP EQUIPMENT - All non-specified drip equipment shall be as supplied by American Manufacturing Company, Inc. including the controls, drip hydraulic unit, pumps, and specialty fittings.

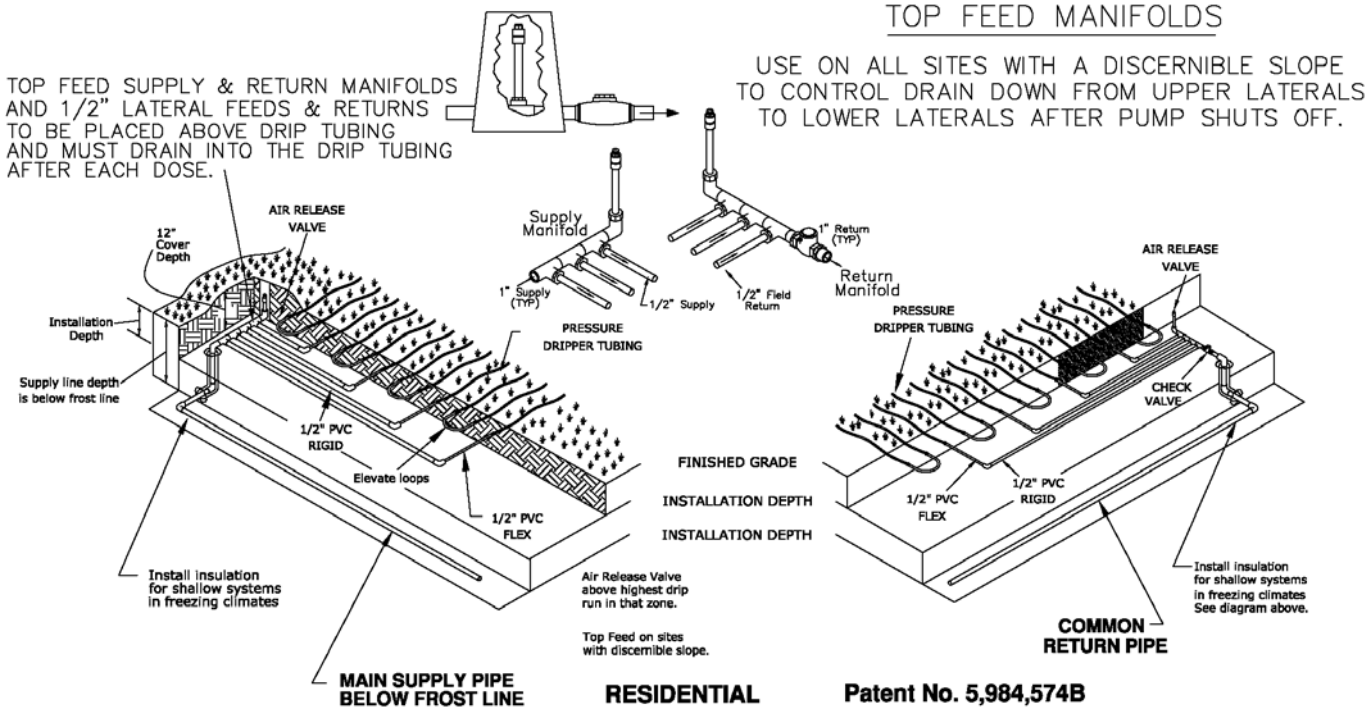
PIPE BEDDING - In ground piping shall be installed according to local codes. Piping shall be installed on original soil or suitably compacted fill or gravel bedded excavations on original soil. Free standing piping shall be schedule 40 PVC and assembled with restrained joints.

STANDARD DETAILS

REMOTE ZONE VALVE

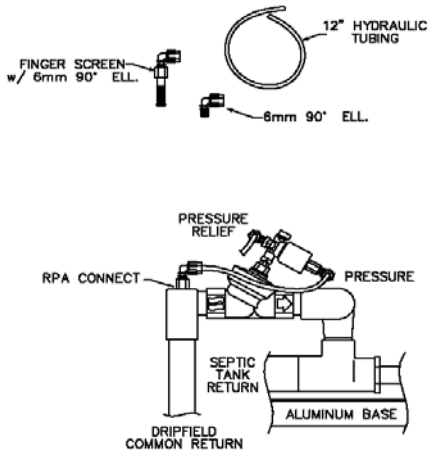
The remote zone valves are typically used on larger systems with more than four zones or when the zones are below the elevation of the pump chamber. On slopes greater than 5% a bentonite clay plug should be installed three feet up contour from the valve box to prevent effluent from piping down the manifold and filling the valve box.




TOP FEED MANIFOLDS
USE ON ALL SITES WITH A DISCERNIBLE SLOPE TO CONTROL DRAIN DOWN FROM UPPER LATERALS TO LOWER LATERALS AFTER PUMP SHUTS OFF.
TOP FEED SUPPLY & RETURN MANIFOLDS AND 1/2" LATERAL FEEDS & RETURNS TO BE PLACED ABOVE DRIP TUBING AND MUST DRAIN INTO THE DRIP TUBING AFTER EACH DOSE.
AIR RELEASE VALVE
12" Cover Depth
Installation Depth
Supply line depth is below frost line
Supply Manifold
1" Supply (TYP)
1/2" Supply
1/2" Field Return
1" Return (TYP)
Return Manifold
PRESSURE DRIPPER TUBING
1/2" PVC RIGID
Elevate loops
1/2" PVC FLEX
FINISHED GRADE
INSTALLATION DEPTH
INSTALLATION DEPTH
Install insulation for shallow systems in freezing climates
Air Release Valve above highest drip run in that zone.
Top Feed on sites with discernible slope.
MAIN SUPPLY PIPE BELOW FROST LINE
RESIDENTIAL
Patent No. 5,984,574B
AIR RELEASE VALVE
PRESSURE DRIPPER TUBING
CHECK VALVE
1/2" PVC FLEX
1/2" PVC RIGID
Install insulation for shallow systems in freezing climates See diagram above.
COMMON RETURN PIPE

OPTIONAL - RETURN PRESSURE ASSEMBLY FOR ZONE RETURN CONTROL VALVE

In the event the drip zones are over 10 feet in vertical elevation above the hydraulic unit, install a “return pressure assembly”. The assembly is to be used to prevent the return line from draining after or during each dose. Remove the zone return connection and reinstall a short 1” nipple in the return valve. Install assembly as shown to the right. The hydraulic tubing providing pressure for the rest of the unit must be plugged and the new tubing from the assembly connected to the pressure side of the solenoid.



RETURN PRESSURE ASSEMBLY (RPA)
NTS

OPTIONS AVAILABLE TOR THE PERC-RITE® DRIP SYSTEM

PUMP FAILURE ALARM OPTION

There is a current sensor relay that one of the leads from the pump contactor is routed through to sense current. In the even no current is sensed when a pump is supposed to be running, the pumps will alternate and then stop running if no current is sensed. The terminals may be jumped in this switch to eliminate alarms when using the control for pilot duty only.

DOSE CUTOUT OPTION

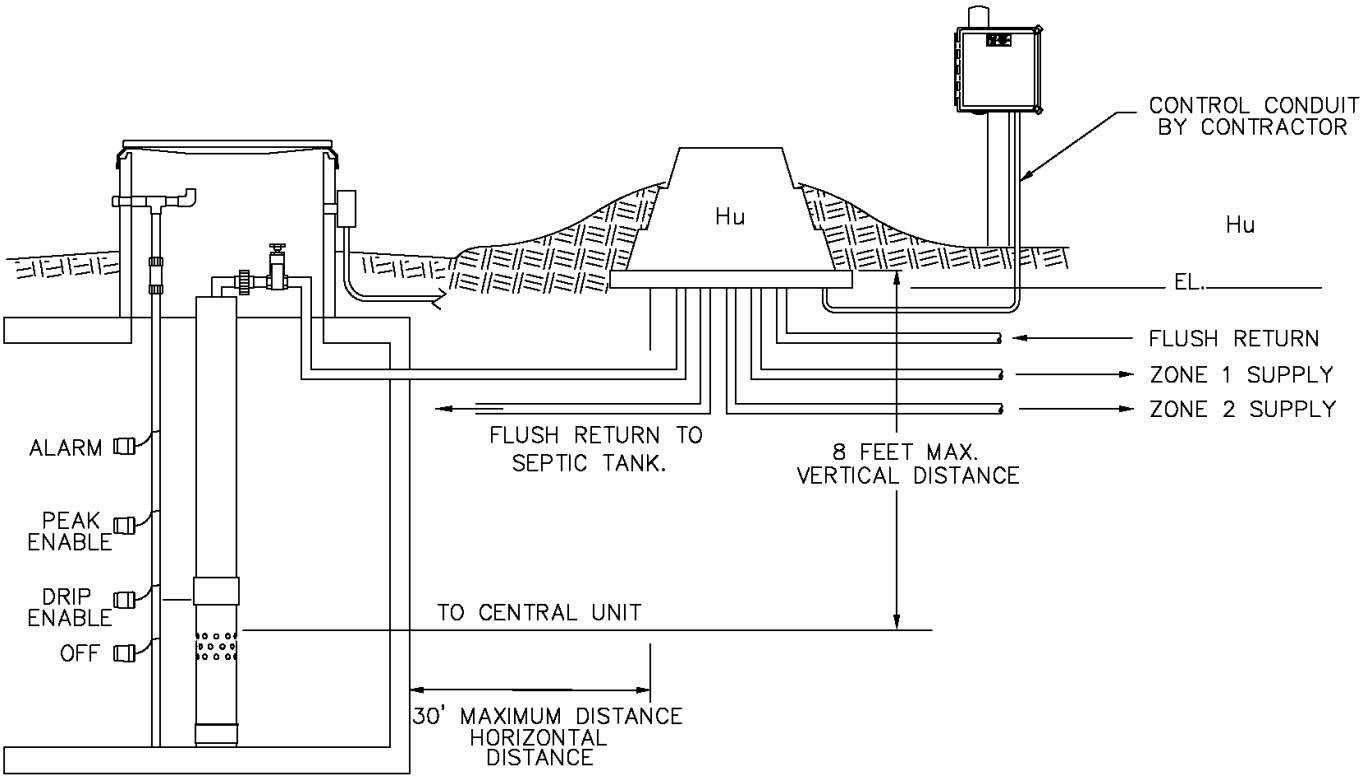
Some controls are provided with a dose cutout based on an input number 0.0. If input 0.0 is lit for a selected period of time, the unit will not run. To eliminate the condition, remove the input and press the reset/cycle start button.

HIGH LEVEL DOSE CUTOUT FOR COMBINATION PRETREATMENT & PERC-RITE® OPTION

The control may be provided with a pretreatment time dose function with duplex time dosed pumps to any primary process and duplex pumps for the final drip dose tank. In the event the drip dose tank is in the high level alarm condition, the primary process pumps will be locked out to not overfill the drip dose tank.

OTHER PERC-RITE® OPTIONS

Controls can be provided with a variety of options that may be remotely monitored. Call American at 1-800-345-3132 for information.



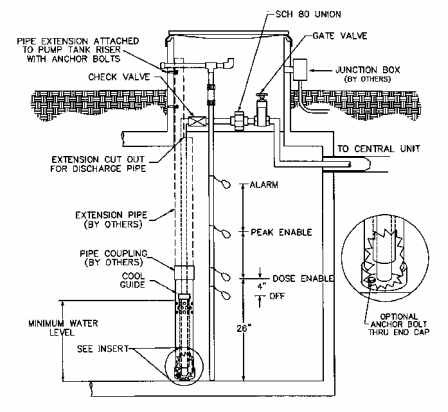
PUMP CHAMBER AND HYDRAULIC FILTER UNIT REQUIREMENTS

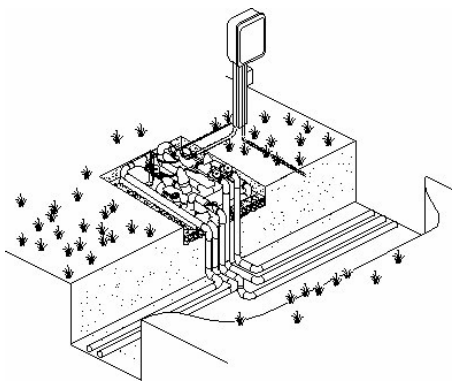
The hydraulic filter unit (HU) must be close to the pump chamber as shown. The limiting factor is the backflushing sequence for the disc filters. The (HU) must be within 30 feet horizontal and 8 feet vertical distance for the pump to have enough TDH to complete backflushing.

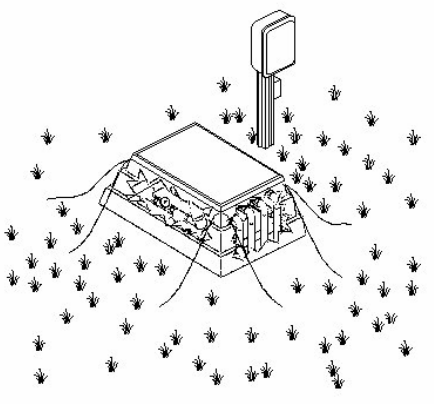
The return line to the septic tank must have gravity flow back to the septic tank. The 1-1/2" line must have a 2% slope to drain back or a check valve should be placed at the (HU) to prevent backpressure on the backflush valves. If longer distances are used, the line size should be increased to 2".

The pump should be placed as shown, secured on the floor of the pump. The pump discharge pipe must have **NO WEEP HOLE** . The pump is to be hard wired into a junction box.

1. Recommend half to full day storage between drip enable and high level alarm.
2. Recommend al least one-quarter day storage between alarm and inlet of tank.
3. Peak selector switch is located on circuit card and should initially be left in "Pump & Alarm" to educate owner on water management.



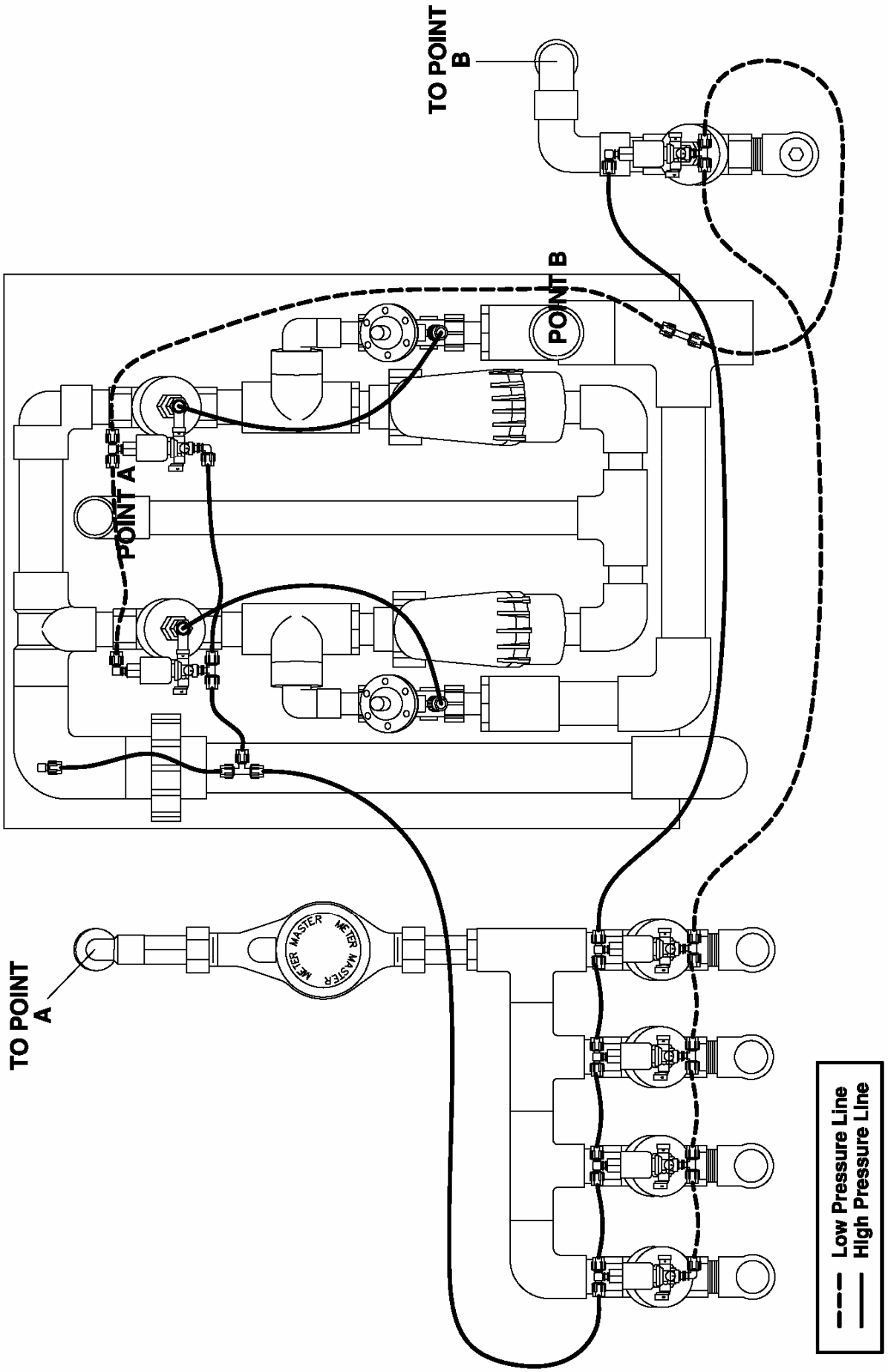


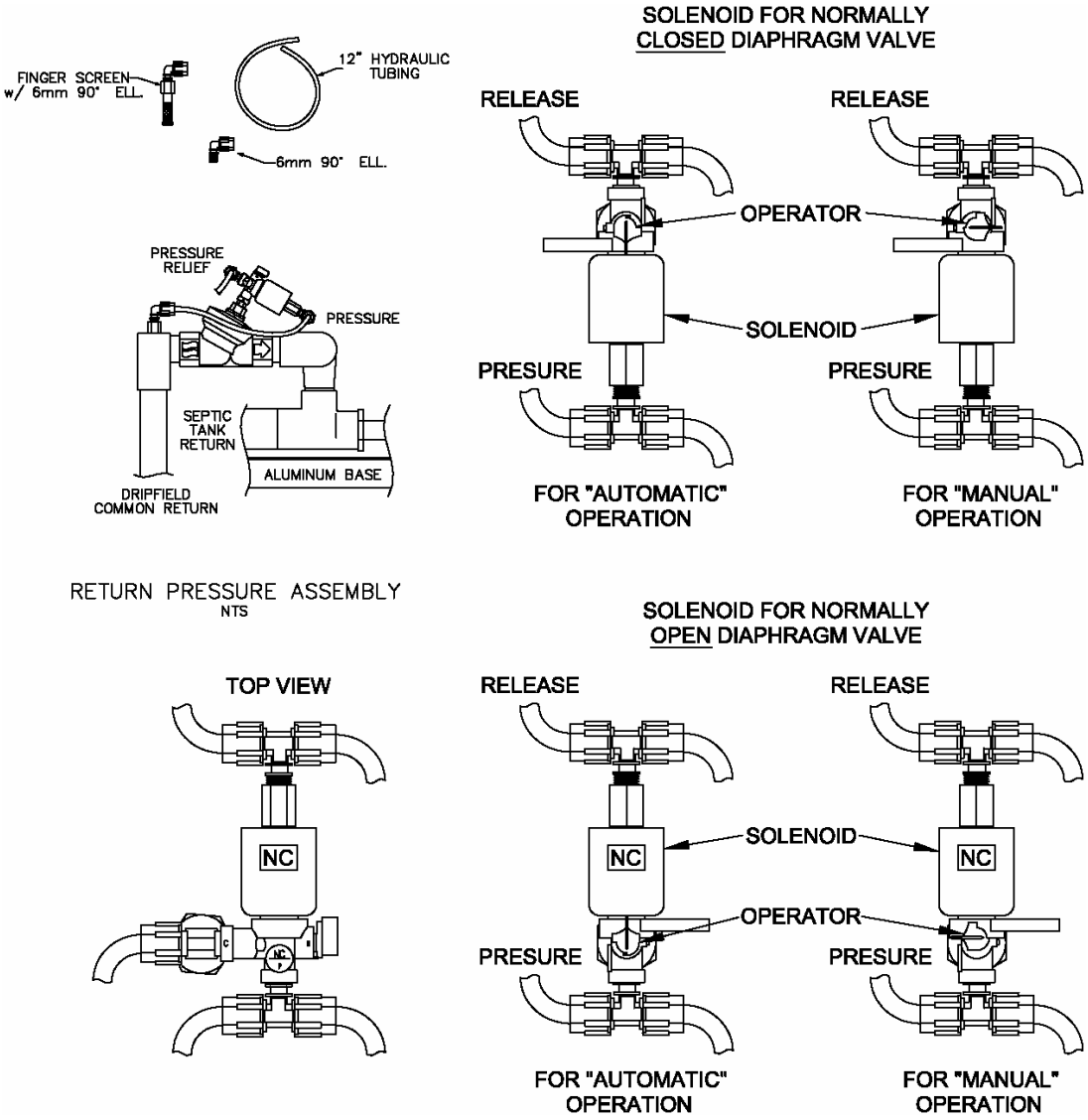


STEP 1 **STEP 2** **STEP 3**

HYDRAULIC UNIT INSTALLATION STEPS

1. Install pump and floats as shown. The pump must NOT be installed with a weep hole due to the high pressure. Pump must be “hard wired” to maintain warranty. A disconnect should be provided next to a suitable outdoor rated junction box.
2. Dig a side trench to set the hydraulic unit. The area must be free from groundwater or rainwater infiltration. (If below original grade more than 4” the unit enclosure must have a positive drain). Center the unit on a gravel bed with the pipes slightly over the edge. Connect the supply and return piping. Install the control panel on a 4”x4” (minimum) pressure treated post with at least 3 feet of clearance from the bottom of the control panel to the ground. The electrician shall provide three sources of power (in conduit) to the control panel per the schematic enclosed in the control enclosure. All control wire shall be run through conduit to the control panel without splices and connected to the terminal strips provided. Connect the heater, floats, solenoid valves, and pump(s) to the control panel. All factory supplied cabling/wiring harnesses from the hydraulic unit to the control panel should be placed in conduit.
3. Install the insulated enclosure and backfill the area making sure not to damage any piping or electrical components. Provide positive drainage from around the central unit to insure no excessive rainwater will enter and rainwater which does enter will drain out. Provide a minimum of 4” of backfill above the bottom edge of the enclosure to help enclosure heater maintain temperatures above freezing. Additional mounding is preferred for freeze protection and aesthetics.


TO POINT B
POINT B
POINT A
TO POINT A
METER MASTER
METER MASTER
Low Pressure Line
High Pressure LIne



NOTES:

1. The hydraulic unit is shown in an explosion view on the previous page.

2. The “normally closed” zone valves and zone return valves have “normally open” solenoids (typically unmarked). These valves are supplied pressure through the solenoid which, when not activated, places pressure on the diaphragm.

3. The “normally open” supply valves have “normally closed” solenoids. The pressure is supplied through the operator and the connection. With the solenoid not activated, pressure bleeds off the diaphragm.

4. **OPTIONAL - RETURN PRESSURE ASSEMBLY FOR ZONE RETURN CONTROL VALVE:** In the event the drip zones are over 10 feet in vertical elevation above the hydraulic unit, install a “return pressure assembly”. The assembly is to be used to prevent the return line from draining after or during each dose. Remove the zone return connection and reinstall a short 1” nipple in the return valve. Install assembly as shown to the right. The hydraulic tubing providing pressure for the rest of the unit must be plugged and the new tubing from the assembly connected to the pressure side of the solenoid.

Installation Procedure Summary

1. Prepare field location for installation.
2. Set septic and pump tanks.
3. Dig header ditch for field manifold.
4. Install dripper tubing.
5. Install loops (flex tubing).
6. Dig ditches for conveyance lines (supply & return).
7. Place Central Unit and mount control panel.
8. Dry fit pressure lines and field manifolds.
9. Set switch tree in pump tank.
10. Glue all fittings and place valve boxes.
11. Install electrical (and phone line if applicable).
12. Check power supply and power up unit.
13. Provide one day volume of clean water for startup.
14. Pressure check all fittings and lines.
15. Inspection of field and loops.
16. Flush all fields through the air release valves.
17. Set run time for Central Unit.
18. Check setup values against calculated values.
19. Find leaks and repair.
20. Backfill once lines and fields are determined to have no leaks. Back filling is to be controlled to prevent the damaging of pipes or fittings.
21. Grade and seed site.
22. Log data registers and startup values.

Startup Procedures - *AMERICAN SEPTIC DRIP*

This procedure outlines the startup procedures for the drip dispersal field tubing system. The process includes flushing dirt, pipe shavings and other possible construction debris out of the tubing and checking dosing rates in a three step process. First, flush through air release valves, second flush through normal flushing process (while checking flow rate), and finally checking final dose flow rate.

I. System Flushing Air Release Valves Off

a. Be sure pump chamber is full of clean water. Check lights on controller for float activation. The "Off" float and "Standard Enable" float should be in the up position before starting field flush. Continue to fill tank to "alarm" float. It should take one days' flow of clean water to flush tubing.
b. Place all toggle switches, on the inner door, in the "Off" position and place filter backflush switch in the "Auto" position.
c. Remove air release valves, attach piece of 1/2" black flex PVC (5' maximum) to 1/2" white PVC with dry coupling (do not glue) and place end to direct discharge away from excavation.
d. Switch pump to "Hand" position. Pump should dead head with no flow meter movement.
e. Place filter backflush to filter #1 position. Note blue valve opening. Backflush for 15 seconds, Place filter backflush switch to the "Auto" position.
f. Place disc filter backflush to filter #2 position. Note blue valve opening. Backflush for 15 seconds, Place filter backflush switch to the "Auto" position.
g. Turn zone #1 to hand position to allow a manual field flush. After water starts discharging from flex PVC, continue to flush for at least three (3) minutes or until no debris (dirt, PVC shavings, etc.) is noted, whichever is greater.
h. Repeat item "e" & "f".
i. Repeat "g" & "h" for each additional zone.
j. Place all toggle switches, on the inner door, in the "Off" position and place filter backflush switch in the "Auto" position.
k. Remove black PVC hose, dry, and glue coupling with air release valves.

II. Field Flush Flow Test

a. Determine each zone flushing GPM by multiplying the number of lateral connections by 1.6 and adding to the dosing GPM. (see "a" in step III) Resultant should not exceed 15 GPM for the two disc filter rack.
b. Switch pump to "Hand" position. Pump should dead head with no flow meter movement.
c. Place filter backflush switch to filter #1 position. Note blue valve opening. Backflush for 15 seconds. Place filter backflush switch to the "Auto" position.
d. Place filter backflush switch to filter #2 position. Note blue valve opening. Backflush for 15 seconds. Place filter backflush switch to the "Auto" position.
e. Turn switch for "Zone #1" and the "Zone Return Valve" to "Hand" position to allow a manual flush. After water starts flowing through zone return valve, flush for three (3) minutes, check flow rate and compare with design flushing flow rate.
f. Place all toggle switches, on the inner door, in the "Off" position and place filter backflush switch in the "Auto" position.
g. Repeat item "b", "c", "d" & "e" for each additional zone.
h. After flushing the last zone leave the pump and zone valve in the "Hand" position and close the zone return valve "Off". After the flow rate stabilizes and compares to design flow rate, see next section.

III. Field Dose Flow Test

a. Determine each design zone dosing Gallons Per Minute (GPM) by the following formula: (If installed as designed refer to calculation sheet.)

$$\frac{\left(\frac{\text{Length of Tubing}}{2}\right) x .65 \text{ Gallons per Hour}}{60 \text{ Minutes per Hour}} = \text{Gallons per Minute Dosing}$$

b. Determine dosing flow rate in the last zone flush tested. The rate should be close to value calculated in "a" above. Check for leaks and repair as necessary.

c. With all toggle switches in the "off" position, backflush filters as described above in step II's "b", "c", & "d".

d. Move the next zone switch to the "Hand" position and make sure the Zone Return switch is in the "off" position, watch flow meter slow as system fills. When pressurized, measure flow rate with watch. The rate should be close to value calculated in "a" above. Check for leaks and repair as necessary.

e. Repeat for each additional zone.

f. Place all switches in the "Auto" position.

IV. Zone Return Pressure Assembly Flow Test

a. In some cases when the drip field is around 10' in elevation above the hydraulic unit or when it is significantly above the unit the valve will not close properly and continue to recycle wastewater back to the septic tank. If this condition occurs, follow the following steps.

b. Remove the zone return connection and reinstall a short 1" nipple in the return valve.

c. Place the "return pressure assembly" in the return line as per standard detail on page 19.

V. Timer Adjustment Drip Zones/ Automatic Mode for Drip

(Note: Timer Enable float must be up for automatic operation)

a. Write down gallons from flow meter and target total gallons dose for all Zones.

b. Place Pump 2 off and pump 1 and Zone #1 in auto position, all other zones "off". Adjust timer screw setting to the approximate calculated value for total gallons per zone. Press "reset" button and hold for 5 seconds. System will automatically backflush filters and dose next zone. Start stop watch when meter begins flow. Record the time it takes to deliver calculated volume. Adjust timer to that actual time (not the calculated time).

c. Repeat for each additional zone, no adjustment should be necessary even if zone is of a different size. High or Low volume values indicate a possible leak or obstruction.

d. Leave all zones in use switched to automatic.

VI. Timer Adjustment Pretreatment/ Automatic Mode

(Note: Timer Enable float must be up for automatic operation)

a. Perform a drawdown test to determine gallons per minute and gallons per dose.

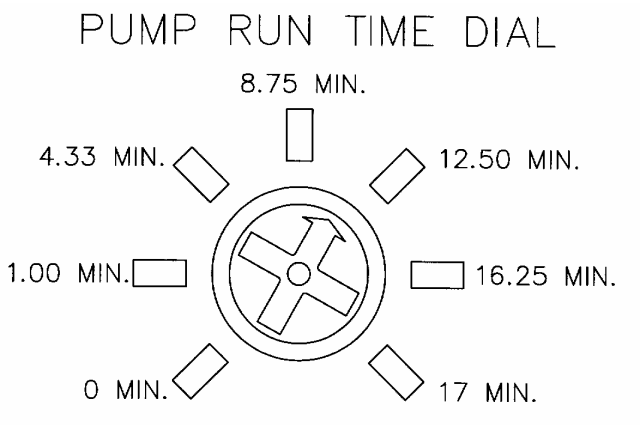
b. Place Pump 2 (pretreatment pump) in auto position. Adjust timer screw setting to the approximate calculated value for total gallons per Dose. Press "reset" button and hold for 5 seconds. System will dose Pretreatment unit. Start stop watch at the beginning of the dose. Record the time it takes to deliver calculated volume. Adjust timer to that actual time (not the calculated time).

d. Leave pump switch in automatic.

The "pump run time dial" will adjust the pump run time from zero minutes to 17 minutes. This run time, when two 900 linear feet zones are in use, will dispose of 270 gpd when dosed with the “Standard Dose Enable” float switch up and 450 gpd when dosed with the “Peak Enable Float” switch up.

Use a small Phillips screw driver to adjust the "pump run time dial". After adjustment, press and hold the reset button until a pump event is initiated (approx. 5 seconds). Time the pump run time after the backflush to determine if the setting is adjusted where wanted. Readjust if necessary. The gallons per day can be set by first determining the gallons per minute in each zone, then the rest time between doses and then adjusting the pump run time as necessary.

NOTE: THE HOMEOWNER ASSUMES FULL RESPONSIBILITY FOR CONDITIONS OR MALFUNCTIONS DUE TO CHANGES IN PUMP RUN TIME BY ANYONE OTHER THAN A QUALIFIED SERVICE REPRESENTATIVE.

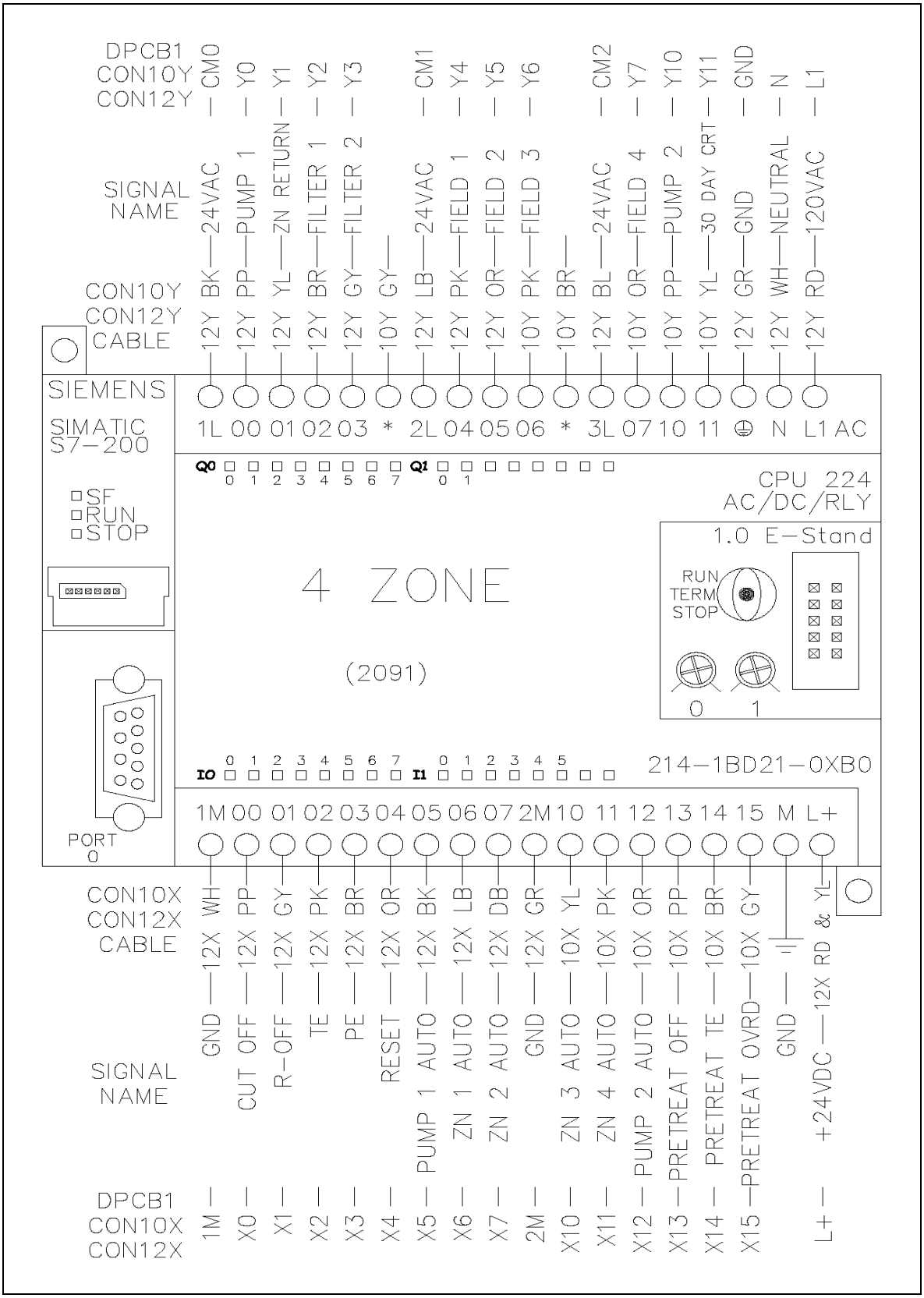


TIMER SETTING

The timer may be easily set with the use of a hand held control adapter. Customers that purchase an optional hand held unit will have the ability to view exact run timer settings as the dial is manually turned. See page 9 of this manual for instructions. The only other way to set the timer is by trial and error. Start an automatic cycle, time the field dose, and then adjust up or down to get close to desired time.

DEALER NOTES;

COMBINATION SIMPLEX
PRETREAT TO DRIP I/O


DPCB1
CON10Y
CON12Y
SIGNAL
NAME
CON10Y
CON12Y
CABLE
SIEMENS
SIMATIC
S7-200
1L 00 01 02 03 * 2L 04 05 06 * 3L 07 10 11 ⏚ N L1 AC
Q0
Q1
CPU 224
AC/DC/RLY
SF
RUN
STOP
1.0 E-Stand
RUN
TERM
STOP
4 ZONE
(2091)
214-1BD21-0XB0
I0
I1
1M 00 01 02 03 04 05 06 07 2M 10 11 12 13 14 15 M L+
PORT
0
CON10X
CON12X
CABLE
SIGNAL
NAME
DPCB1
CON10X
CON12X
1M — GND — 12X WH
X0 — CUT OFF — 12X PP
X1 — R-OFF — 12X GY
X2 — TE — 12X PK
X3 — PE — 12X BR
X4 — RESET — 12X OR
X5 — PUMP 1 AUTO — 12X BK
X6 — ZN 1 AUTO — 12X LB
X7 — ZN 2 AUTO — 12X DB
2M — GND — 12X GR
X10 — ZN 3 AUTO — 10X YL
X11 — ZN 4 AUTO — 10X PK
X12 — PUMP 2 AUTO — 10X OR
X13 — PRETREAT OFF — 10X PP
X14 — PRETREAT TE — 10X BR
X15 — PRETREAT OVRD — 10X GY
GND —
L+ — +24VDC — 12X RD & YL
CM0 — 24VAC — BK — 12Y
Y0 — PUMP 1 — PP — 12Y
Y1 — ZN RETURN — YL — 12Y
Y2 — FILTER 1 — BR — 12Y
Y3 — FILTER 2 — GY — 12Y
GY — 10Y
CM1 — 24VAC — LB — 12Y
Y4 — FIELD 1 — PK — 12Y
Y5 — FIELD 2 — OR — 12Y
Y6 — FIELD 3 — PK — 10Y
BR — 10Y
CM2 — 24VAC — BL — 12Y
Y7 — FIELD 4 — OR — 10Y
Y10 — PUMP 2 — PP — 10Y
Y11 — 30 DAY CRT — YL — 10Y
GND — GND — GR — 12Y
N — NEUTRAL — WH — 12Y
L1 — 120VAC — RD — 12Y

DATA REGISTERS AND THE HAND HELD PROGRAMMING & MONITORING UNIT

Dealers may purchase the optional hand held programming & monitoring unit (hand held unit) in order to see the timer settings and counter values as listed on the Data Monitoring Table on the next page. The device is the size of a hand held calculator and will easily fit into the standard installers service kit. The table may be copied to log in data from a specific site for a specific date and time.

The hand held unit may be plugged into or removed from the microprocessor at any time. Even in the middle of and operation the control will only divert back to automatic operation. The use of the hand held is not necessary to operate the unit. It only makes setting of the run time easier and proportioning of the run time possible. In most cases however the proportioning is not necessary and the timer settings can be tested with a stop watch.

Data Registers - *AMERICAN PERC-RITE® DRIP*
Counters are used to provide delay time for doses and flushing sequences. Counters may be adjust to start cycles. Different dose times for each zones may be set. Registers are field adjustable with a hand held unit only. The following table shows which registers can be viewed and adjusted.

Data Registers - *AMERICAN TWO TANK PRETREATMENT TO DRIP*
There are registers available for use with a ***TWO TANK PRETREATMENT TO DRIP*** system. Detailed information for this system is available from American at our web site.

TO START HAND HELD

- Plug hand held unit with matching plug shape to socket
- Press “F1” for main menu (main menu should already be on screen)
  Note: If you press “esc” another menu may be seen, do not operate from this menu. Press “esc” again to return to the main menu.

“Main Menu”

MAIN	DATA	VIEW	EDIT
F1	F2	F3	F4

TO CHECK TIMER AND COUNTER REGISTERS

- Press “F2” to view data - Pump and Zone Counters & ETM’s
- Press “F3” to view timers and counters - Run & Rest times during operation
- Press “F4” to edit timers and counters - Operational setup values

TO EDIT (CHANGE) REGISTER VALUES

- Press “F4” to edit timers and counters
- Use small Phillips screwdriver (on field pump run time screw) to adjust pump run times
- Use arrows to move left flashing cursor on register that you want to change
- Press “ENTER”, cursor will highlight the number of that register you want to change
- Use arrows to change value to desired number, and then press “ENTER”. For screens with multiple values, press “ENTER” repeatedly until screen changes.

Note: After thirty seconds of inactive viewing of a register, the hand held will return to the top of the function register in use. After four minutes of inactivity, the hand held will return to the main menu.

DATA MONITORING TABLE

NAME: _____ DATE: ___ /___ /___

Address: _____ Time: ___ : ___ AM PM

_____

Press (F1) to return to main menu at any time. Press the noted (F2,F3) to review and (F4) to edit the referenced registers. After thirty seconds of inactive viewing of a register, the hand held will return to the top of the function register in use. After another four minutes of inactivity, the hand held will return to the main menu.

Legend: (m) minutes, (h) hours, (t) tenths of a second. All rest times are in minutes

Scr. No.	(F2) DATA RECORD	VALUE
1	Zone 1 Dose Counter	
	Zone 1 Dose ETM (m)	
2	Zone 2 Dose Counter	
	Zone 2 Dose ETM (m)	
3	Zone 3 Dose Counter	
	Zone 3 Dose ETM (m)	
4	Zone 4 Dose Counter	
	Zone 4 Dose ETM (m)	
5	Pump 1 Counter	
	Pump 1 ETM (m)	
6	Pump 2 Counter	
	Pump 2 ETM (m)	
7	Peak Dose Counter	
	Peak Enable ETM (m)	
8	High Lvl Counter [opt.]	
	High Lvl ETM (m) [opt.]	
9	Peak Zone ETM (m)	
	Peak SF ETM (m)	
10	Zone 1 Field Flush Ctr.	
	Zone 2 Field Flush Ctr.	
	Zone 3 Field Flush Ctr.	
	Zone 4 Field Flush Ctr.	

Scr. No.	(F3) VIEW STATUS	VALUE
1	Current Zone	
	Target Run Time (t)	
	Elapsed Run Time (t)	
2	Zone Rest Target	
	Elapsed Rest Time	
3	PRTR Target Rest Time	
	PRTR Elapsed Time (m)	
4	Z1 FF Dose Cnt	
	Z2 FF Dose Cnt	
	Z3 FF Dose Cnt	
	Z4 FF Dose Cnt	
5	Next Zone to Dose	
	Backflush Timer (t)	
6	2T	
	Peak	
	Duplex	
	0=Off / 1=On	
7	Serial #	
8	Dialer Day	
	Dialer Hour	

Scr. No.	(F4) EDIT SETTINGS	VALUE
1	Pretreat Run Time (m)	
2	Zone 1 Run Time (t)	1,500-11,700
	Zone 2 Run Time (t)	1,500-11,700
	Zone 3 Run Time (t)	1,500-11,700
	Zone 4 Run Time (t)	1,500-11,700
3	Zone 1 Dose %	100
	Zone 2 Dose %	100
	Zone 3 Dose %	100
	Zone 4 Dose %	100
4	2Z STD Enable Rest	180
	2Z Peak Enable Rest	108
5	3Z STD Enable Rest	120
	3Z Peak Enable Rest	72
6	4Z STD Enable Rest	90
	4Z Peak Enable Rest	54
7	SF OFF Rest Time	190
	SF STD Enable Rest	90
	SF Peak Enable Rest	45
8	Peak Dose Allow (h)	72
	Auto FF Time Int. (h)	336
9	Z1 FF Count Interval	25
	Z2 FF Count Interval	25
	Z3 FF Count Interval	25
	Z4 FF Count Interval	25
10	Back Wash Frequency (t)	3,000
11	Dialer Day	
	Dialer Hour	

DEALER NOTES;

Loading a Program in a S7-200 series PLC 224/226/*

1. Place Run/Term/Stop switch shown in Figure A in the stop position.
2. Remove all power from the system.
3. Remove the cover or battery from the Eprom (memory chip) housing noted in Figure A.
4. Look at the underside of the Eprom () Figure C and align it with the socket connector noted in Figure B before inserting.
5. After assuring alignment place the chip in the slot and restore power to the system (with switch still in stop position).
6. Wait 10 seconds.
7. Power the system down.
8. Remove the Eprom.
9. Replace cover or battery.
10. Restore system power.
11. Place switch in the run position.

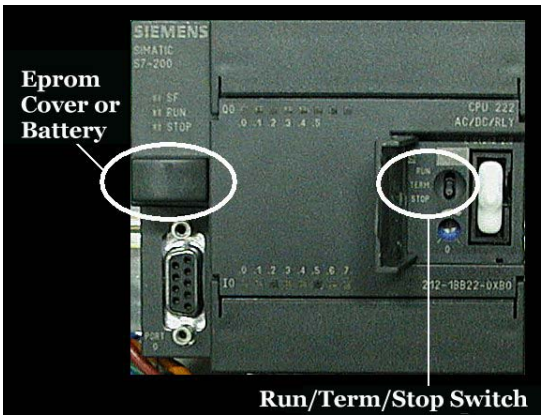


Figure A

Figure C

Figure B

Timer Screws

0 – Drip Zones
1 - Pretreat

American Manufacturing Company, Inc.
P.O. Box 97, Elkwood, VA 22718
800-345-3132 ~ www.americanonsite.com

Owner: _____ Service Provider: _____

System Address: _____ Address: _____

_____ _____

PIN/Const. Permit/
Health Dept. ID: _____ Phone: _____

Tax Map No.: _____ Certification No.: _____

Sub Div.: _____ Lot No.: _____ Date: _____

INSPECTION AND OPERATION PROCEDURE
PERC-RITE® ONSITE DRIP DISPERSAL SYSTEM

I. Monitoring Inspection Event Scheduled ( ) Unscheduled ( )

II. Operational Inspection

A. Field Conditions

1. Walk the field and record any visible wet spots from the drip system.

B. Controller

1. Lights and manual switch positions.
   a. Open the control panel and open the lid to the hydraulic unit and pump tank. Make sure all manual switches are in the automatic position. With Microprocessor on, verify power light and run light are on.
2. Microprocessor input: See table in owners manual. Verify float and auto inputs.
3. Microprocessor output: Verify there is output only when in automatic operation. You may start automatic cycle with “Reset/Stop” button.

C. Pump Tank Liquid Level Float Switches

1. Check liquid level in the pump tank to confirm switch operation.
2. If a float is down, its light should be off. Raise alarm float to activate alarm. Lower float and reset alarm condition.

D. Pump and Valve Operation

1. Place pump "Hand-Off-Auto" switch in the "Hand" position to dead head pump against valves. Then open (optional) master valve. Flow meter should not turn indicating there are no leaks
2. With the pump running, place each zone valve in the "Hand" (open) position one at a time to check operation. With one zone valve open, flow should register on the flow meter. When the zone valve closes (off position), the flow should stop.
3. With one zone valve open and flowing, close and reopen (optional) master valve to check operation.

4. With the pump in the "Hand" position open the filter backwash valve for filter one and two for ten seconds then close. There should be no flow registering in the flow meter and you should hear the valves open and close. The backwash return valve diaphragm will rise then lower during backflush.
5. Open one zone valve and dose a zone until flow slows to design flow then open zone return to see flow increase, close to see flow slow.
6. Return all switches to the automatic position

E. Hydraulic Unit

1. Examine all hydraulic components for leaks, tubing crimps and other problems.
2. Test heater if installed for cold climates.

III. Capacity Maintenance Inspections Zone Dose Flow Rates

1. Open the air release valve boxes and inspect. Make sure each air release closes during the dose with no water leaks after air is evacuated and valve is seated.
2. Determine how many zones are in operation and the Startup flow rates from the installation records.
3. With the pump in the "Hand" position, select the first zone by placing the zone valve switch in the "Hand" position. After pressurization time, check flow rates by reading the flow meter for a timed minute. Repeat for all zones. Report any excess flow variances from original flow rates.
4. After the final zone is checked, place the "Zone Return" valve in the "Hand" position while the "Zone Valve" is still in the "Hand" position and verify that the flow rate increased to provide field flushing.
5. Return appropriate switches to the automatic position.
6. Press reset button for 5 seconds and check automatic zone dosing time.

IV. Reporting

1. Provide the summary report to customer showing gallon flow to each field along with pertinent operating information and suggestions.
2. Place signed and dated inspection report to customer file, input inspection report into "Carmody" file with and regulatory agency as needed.
3. Have backup records available and be prepared to discuss operation and maintenance specifics with customer personnel.

V. Operator Signature _____ Date: _____

VI. Owners Signature _____ Date: _____

Perc-Rite® Dealers are authorized to reproduce forms in this manual as needed for each site.

Additional comments (use back of copy if necessary):

PERC-RITE® REPORTING RECORD
FOR
DRIP DATA MONITORING

Owner: _____ Service Provider: _____

System Address: _____ Address: _____

_____ _____

PIN/Const. Permit/
Health Dept. ID: _____ Phone: _____

Tax Map No.: _____ Certification No.: _____

Sub Div.: _____ Lot No.: _____ Date: _____

A. System is operating satisfactory upon **Arrival**. yes ( ) or no ( )

R. The system was **Repaired** prior to leaving. check if yes ( )

D. System service has been **Deferred** (until next inspection). check if yes ( )

F. System is **Flagged** (service required prior to next inspection). check if yes ( )

*Using A through F above, answer 1 through 11 below in their corresponding boxes.	(Y) / (N) A	R	D	F
1. Components appear to be in good repair.	( ) / ( )	____	____	____
2. System operates within design limits.	( ) / ( )	____	____	____
3. Current usage (avg. gpd)	_____			
4. All lids, access hatches, & risers are safe & secure.	( ) / ( )	____	____	____
5. Pump operates correctly.	( ) / ( )	____	____	____
6. Control operates correctly.	( ) / ( )	____	____	____
7. Level sensor operates correctly.	( ) / ( )	____	____	____
8. Filters function properly.	( ) / ( )	____	____	____
9. Previous flow meter reading. Date ___/___/_____	Reading _____			
10. Current flow meter reading.	Reading _____			
11. Zone Dose Startup GPM.	Z1____ Z2____ Z3____ Z4____			
12. Zone Dose Current GPM.	Z1____ Z2____ Z3____ Z4____			
13. Dripline flushes properly.	( ) / ( )	____	____	____
14. No evidence of surfacing in field.	( ) / ( )	____	____	____
15. Manufact. check list was performed satisfactorily (where applicable).	( ) / ( )	____	____	____

16. Summarize Corrective Measures and/or Adjustments Performed (Comments).

_____

_____

The above list of questions are prepared for entry into the Carmody Service tracking system and I attest this information I have provided is true and accurate to the best of my knowledge.

Operator Signature _____ Date _____

Owner Signature _____ Date _____

Order Information

AMERICAN MANUFACTURING COMPANY, INC.
P.O. Box 97, Elkwood, VA 22718
Phone: (800) 345-3132 Fax: (540) 829-1031
E-mail: sales@americanonsite.com Web: www.americanonsite.com

US MAIL: P.O. BOX 97
ELKWOOD, VA 22718-0097

FREIGHT TERMS

All materials shipped f.o.b. Gainesville, Virginia, via UPS or common carrier. Please consult factory for freight allowances.

TERMS OF PAYMENT

With an approved credit account, terms are 2% 10 days, net 30 days from date of invoice. A 2% service charge will be applied to all past due invoices. Customer agrees to pay all reasonable collection fees incurred by American Manufacturing. All other orders will be shipped C.O.D. Deposits on some special orders may be required.

PRODUCT CHANGES

American reserves the right to change prices and modify or redesign any product without notice.

ERRORS AND CLAIMS

All shipping errors must be reported within 10 days. American Manufacturing will not be responsible for damages, shortages or delays caused by shipping delays. Claims which are the responsibility of American will be expedited immediately, but are limited to credit on or replacement of merchandise involved.

AMERICAN MANUFACTURING LIMITED WARRANTY

For one year (12 months) after date of purchase, American Manufacturing will repair or replace any product or portion thereof which proves to be defective due to materials or workmanship of American Manufacturing. We reserve the right to repair or replace defective materials at our discretion.

This warranty does not cover the following conditions:

1. Defects or problems caused by improper installation or maintenance of materials.
2. Abuse, neglect or accidental damage of products.
3. Normal maintenance or upkeep of products.
4. Lightning, war, floods, or other acts beyond our control.
5. Misapplication of our products for their designed purpose, or misapplication according to local, state or national codes when in effect.
6. American Manufacturing Company or its representatives are not responsible for labor for replacement of defective parts.

Defective or warranted items must be returned to American or a location designated by AMC. All returns must be accompanied by a return goods authorization number (RGA) supplied by American.

Manufacturing will in no way be responsible for any losses or damages incurred by failure of equipment, parts or service. NOTE: Some states do not allow exclusion of damages, so this may not apply to you.

There are no other warranties written or implied.

AMERICAN MANUFACTURING COMPANY, INC.

INNOVATIVE TECHNOLOGY FOR THE ENVIRONMENTAL AGE

CATALOG PRODUCTS

American Manufacturing Company, Inc. manufactures many specialty On-Site Wastewater products including the Bull Run® Valve, Dial-A-Flow™, Distribution Boxes, accessories and Controls. American also supplies as an Original Equipment Manufacturer (OEM) many other products unique to the On-Site Industry.

The American On-Site Products Catalog is used throughout the industry not only for purchasing but for reference and education. If an individual desires a product not shown in the catalog, a toll free call to our 800 number will normally result in getting information about the desired product.

CONTROLS

American Manufacturing becomes involved with the entire operation of the system whether potable water, process water, or wastewater. American has staff Professional Engineers, designers, soil scientists, and trained sales people with state-of-the-art experience in control systems.

Our objective is to provide the most practical, economical, and efficient control device for fluid handling. We inventory many standard application controls and are able to manufacture special application panels in a very timely manner due to our modular design and manufacturing methods.

PACKAGES

American Manufacturing Company, Inc. manufactures many specialty On-Site Wastewater system packages including Recirculation Sand Filter components, pump station equipment, and State-Of-The-Art American ***"PERC-RITE®" Drip*** units incorporating automatic field flushing, disc filter backflushing, and pressure compensating emitters.

1-800-345-3132

www.americanonsite.com